PEAT

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Peat is a renewable natural organic material of botanical origin and commercial significance. Peatlands are situated predominately in shallow wetland areas of the Northern Hemisphere, where large deposits have developed from the gradual decomposition of plant matter under anaerobic conditions.

Peat has widespread use as a plant-growth medium in a variety of agricultural and horticultural applications, where its fibrous structure and porosity promote a unique combination of water-retention and drainage characteristics. Commercial applications include lawn and garden soil amendments, potting soils, and turf maintenance on golf courses. In industry, peat is used primarily as a filtration medium to remove deleterious materials suspended in municipal storm-drain water, pathogens from sewage effluents, and toxic materials from process waste streams. In its dehydrated form, peat is a highly effective absorbent for fuel and oil spills on land and water.

The United States is a significant producer and consumer of peat for horticultural and industrial purposes. Peat was extracted and processed from 55 identified operations in 15 of the conterminous United States and by several companies in Alaska. The grades of peat are classified according to the degree of composition of component plant material with sphagnum moss being the least decomposed, followed by hypnum moss, reed-sedge, and humus, which is the most decomposed.

Production

Domestic production data for peat were developed from a voluntary survey of operations in the conterminous United States by the U.S. Geological Survey (USGS). Of the 59 operations to which a survey request was sent, 41 responded, representing 64% of total production and 71% of value. Peat production in 2002 was 642,000 metric tons (t), a 26% decrease from that of 2001 (table 2). The large drop was primarily from one company ceasing peat harvesting at several locations. Output from Alaska was estimated to be 26,800 cubic meters in 2002, according to the Alaska Department of Natural Resources, which conducted its own survey of mineral production in the State (Szumigala and Swainbank, 2003). Production was reported by volume only.

Reed-sedge composed 88.3% of domestic peat production, followed by hypnum moss, 4.3%; sphagnum moss, 4%; and humus, 3.5% (table 4). Florida, Michigan, and Minnesota accounted for 87% of U.S. production (table 3).

Consumption

Sales of domestic peat fell by about 7% to 933,000 t compared with those of 2001. Packaged products composed 45% of total domestic sales tonnage and commanded premium prices for all grades of peat. Apparent consumption decreased by about 13% from that of 2001 because of lower production and imports. General soil improvement and potting soil mixes were the two largest usage categories, accounting for 88% of domestic sale tonnage. Other uses, in order of sales volume, included nursery applications, golf course application, mixed fertilizers, and seed inoculants. The United States imported 54% of its consumption requirements, primarily from Canada, where deposits of high-quality sphagnum moss are extensive. Canadian peat was sold in bulk for blending in custom soil mixes and packaged for horticultural use; however, a detailed distribution of uses was not available.

Stocks

U.S. yearend stocks of peat decreased by 20% to 207,000 t (table 4). Reed-sedge peat accounted for 87% of total stocks, followed by sphagnum moss and humus.

Prices

The total reported free on board (f.o.b.) value for domestic peat sold in the United States was $24.9 million, according to the annual survey of domestic peat producers. The average unit value increased to $26.70 per metric ton compared with $24.82 per ton in 2001. On a unit-value basis, packaged sphagnum moss was valued at $61.15 per ton, f.o.b. plant; hypnum moss, $78.37 per ton; reed-sedge, $28.27 per ton; and humus, $14.34 per ton (table 7).

Foreign Trade

Imports of peat decreased by 2% to 763,000 t from 2001 (table 8). The total customs import value was $149 million, or $194.67 per ton. Imports of sphagnum moss from Canada decreased to 751,000 t, which represented 98% of total imports and 58% of total Canadian production (table 9). U.S. companies exported 32,000 t of peat.

World Review

World production declined to 24.2 million metric tons (Mt) in 2002 compared with 27 Mt in 2001. Peat harvesting in Ireland was limited by excessive rain in the spring and summer and accounted for most of the drop in world production (Peat News, 2002b). According to information available to the USGS, 24 countries were reported to have produced peat (table 9). Finland, Germany, Ireland, Belarus, Russia, and Canada, in order of production, were the top producing countries. Other significant producing countries included Ukraine, Sweden, Estonia, the United States, Moldova, and Latvia. Peat is an important source of energy in Eastern Europe, Ireland, and Scandinavia. In 2002, at least 10.2 Mt of reported world production was for fuel use. Most of the unspecified uses were believed to have been for horticultural use; however, information was not available to make an accurate estimate.

Canada.—Production of sphagnum moss decreased slightly to 1.3 Mt (table 9). New Brunswick, Quebec, and Alberta were the major producing Provinces, in order of importance, accounting for 77% of production. British Columbia, Manitoba, Newfoundland, Nova Scotia, Prince Edward Island, and Saskatchewan also reported peat production (Natural Resources Canada, 2003§[1]). Exports to the United States decreased to 751,000 t.

United Kingdom.—The Scotts Company reached an agreement with English Nature, the statutory body for conservation in England, to cease harvesting peat at three locations totaling 1,500 hectares in South Yorkshire and Cumbria. English Nature paid Scotts £17 million for the three sites and began restoration of two of the sites to their original habitat. Scotts will be permitted to extract peat from one of the bogs, Hatfield Moor in South Yorkshire, for 3 years as it makes the transition to using peat imported from Ireland at the Hatfield facility where the peat is blended with other organic material to produce potting soil. This agreement will cut peat production capacity in the United Kingdom by one-half (Peat News, 2002a).

Outlook

Because peat is the primary constituent of growing media, the demand for peat generally follows that of horticultural applications. During the past decade, golf course construction and maintenance, residential and commercial landscaping, and rising interest in home gardening have contributed to increased peat usage. According to recent studies, four out of five U.S. households undertook some form of lawn and garden activity in 2002, and the average family spent $466 per year on their yards, the highest level in 5 years. Overall, gardening is a $40 billion per year industry in the United States (Kelly, 2002). Although demand for peat in the United States will likely continue to grow, the amount obtained from domestic producers may be supplanted by imports from Canada. Several other important factors, including Federal and State wetlands protection regulations, restrictions on permitting new bogs, and competition from composted yard waste and other organic materials also will have an influence on the domestic peat industry.

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Peat. Ch. in United States Mineral Resources, Professional Paper 820, 1973.

[1]A reference that includes a section mark (§) is found in the Internet Reference Cited section.

Other

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TABLE 1
SALIENT PEAT STATISTICS[1]

(Thousand metric tons unless otherwise specified)

	1998	1999	2000	2001	2002
United States:[2]					
Number of active producers	60	58	61	57	55
Production	685	731	792	870	642
Sales by producers:					
Bulk	399	444	483	500	515
Package	392	390	364	498	418
Total	791	834	847	998	933
Value thousands	$19,200	$22,100	$22,700	$24,800	$24,900
Average per metric ton	$24.26	$26.48	$26.85	$24.82	$26.70
Average per metric ton, bulk	$24.98	$25.83	$23.45	$22.91	$22.74
Average per metric ton, packaged or baled	$23.52	$27.23	$31.36	$26.72	$31.58
Exports	30	40	37	31	32
Imports for consumption	761	752	786	776	763
Consumption, apparent[3]	1,430	1,580	1,530	1,640	1,420
Stocks, December 31, producers'	408	272	279	257	207
World, production	19,800	31,000	26,200 r	27,000 r	24,200 e

[e]Estimated. [r]Revised.

[1]Data are rounded to no more than three significant digits, except average values per metric ton.

[2]Exclusive of Alaska.

[3]Apparent consumption equals U.S. production plus imports minus exports plus adjustments for industry stock changes.

TABLE 2
RELATIVE SIZE OF PEAT OPERATIONS IN THE UNITED STATES

Size	Active operations		Production (thousand metric tons)	
(metric tons per year)	2001	2002	2001	2002
23,000 and more	11	7	662	494
9,000 to 22,999	8	5	122	63
5,000 to 8,999	8	8	53	53
1,000 to 4,999	8	9	24	24
Less than 1,000	22	26	9	9
Total	57	55	870	642

TABLE 3

U.S. PEAT PRODUCTION AND SALES BY PRODUCERS IN 2002, BY STATE[1]

Region and State	Active operations	Production (thousand metric tons)	Sales		
			Quantity (thousand metric tons)	Value[2] (thousands)	Percentage packaged
East:					
Florida	8	378	559	$11,500	22
Pennsylvania	4	4	3	132	20
Other[3]	6	14	17	653	53
Total or average	18	396	579	12,300	23
Great Lakes:					
Michigan	9	131	188	4,670	88
Minnesota	12	47	64	5,320	72
Other[4]	12	60	95	2,510	79
Total or average	33	238	347	12,500	83
West[5]	4	7	7	110	8
Grand total or average	55	642	933	24,900	45

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Values for free on board producing plant.

[3]Includes Maine, New Jersey, New York, and West Virginia.

[4]Includes Illinois, Indiana, Ohio, and Wisconsin.

[5]Includes Iowa, Montana, and Washington.

TABLE 4
U.S. PEAT PRODUCTION AND PRODUCERS' YEAREND STOCKS
IN 2002, BY TYPE

Type	Active operations	Production1 (metric tons)	Percentage of production	Yearend stocks[1] (metric tons)
Sphagnum moss	8	25,500	4	7,090
Hypnum moss	6	27,500	4	--
Reed-sedge	32	567,000	88	181,000
Humus	11	22,400	4	18,400
Total	55 [2]	642,000	100	207,000

-- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Some plants produce multiple types of peat; may not add to totals shown.

TABLE 5

U.S. PEAT SALES BY PRODUCERS IN 2002, BY TYPE AND USE[1]

Use	Sphagnum moss			Hypnum moss			Reed-sedge		
	Quantity			Quantity			Quantity		
	Weight (metric tons)	Volume[2] (cubic meters)	Value (thousands)	Weight (metric tons)	Volume (cubic meters)	Value (thousands)	Weight (metric tons)	Volume (cubic meters)	Value (thousands)
Earthworm culture medium	--	--	--	--	--	--	209	440	$5
General soil improvement	40,700	358,000	$2,340	15,600	37,500	$700	383,000	876,000	8,390
Golf courses	7,020	47,200	589	--	--	--	17,200	60,500	2,570
Ingredient for potting soils	2,060	9,910	93	42,900	94,500	1,420	330,000	706,000	6,260
Mixed fertilizers	--	--	--	--	--	--	22,700	50,000	475
Nurseries	1,300	5,880	64	793	1,780	20	35,800	78,700	763
Packing flowers, plants, shrubs, etc.	119	580	5	--	--	--	163	445	5
Seed inoculant	--	--	--	--	--	--	5,590	6,400	64
Vegetable growing	--	--	--	--	--	--	2,480	5,560	56
Other	--	--	--	--	--	--	1,360	2,500	750
Total	51,200	422,000	3,100	59,200	134,000	2,140	799,000	1,790,000	19,300

Use	Humus			Total		
	Quantity			Quantity		
	Weight (metric tons)	Volume (cubic meters)	Value (thousands)	Weight (metric tons)	Volume (cubic meters)	Value (thousands)
Earthworm culture medium	76	128	$1	285	568	$6
General soil improvement	4,130	7,160	59	443,000	1,280,000	11,500
Golf courses	258	448	3	24,500	108,000	3,160
Ingredient for potting soils	1,980	3,260	37	377,000	814,000	7,810
Mixed fertilizers	860	1,350	21	23,500	51,400	496
Nurseries	2,050	3,560	41	39,900	89,900	888
Packing flowers, plants, shrubs, etc.	1,120	1,750	13	1,410	2,780	23
Seed inoculant	--	--	--	5,590	6,400	64
Vegetable growing	887	1,290	11	3,370	6,850	67
Other	12,400	21,200	151	13,800	23,700	901
Total	23,800	40,200	337	933,000	2,380,000	24,900

-- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Volume of nearly all sphagnum moss was measured after compaction and packaging.

TABLE 6
AVERAGE DENSITY OF DOMESTIC PEAT SOLD IN 2002

(Kilograms per cubic meter)[1]

	Sphagnum moss	Hypnum moss	Reed-sedge	Humus
Bulk	233	593	602	783
Package	146	475	565	768
Bulk and package	159	579	585	773

[1]To convert kilograms per cubic meter to pounds per cubic yard multiply by 1.685.

TABLE 7
PRICES FOR PEAT IN 2002[1]

(Dollars per unit)

	Sphagnum moss	Hypnum moss	Reed-sedge	Humus	Average
Domestic:					
Bulk:					
Per metric ton	$57.86	$31.55	$20.95	$13.67	$22.74
Per cubic meter	$13.48	$18.71	$12.61	$10.71	$13.26
Packaged or baled:					
Per metric ton	$61.15	$78.37	$28.27	$14.34	$31.58
Per cubic meter	$8.93	$37.19	$15.96	$11.02	$14.07
Average:					
Per metric ton	$60.44	$36.14	$24.21	$14.12	$26.70
Per cubic meter	$9.61	$20.92	$14.16	$10.92	$13.68
Imported, total, per metric ton[2]	XX	XX	XX	XX	$194.67

XX Not applicable.

[1]Prices are free on board plant.

[2]Average customs value.

TABLE 8

U.S. IMPORTS FOR CONSUMPTION OF PEAT MOSS, BY COUNTRY[1]

	2001		2002	
Country	Quantity (metric tons)	Value[2] (thousands)	Quantity (metric tons)	Value[2] (thousands)
Canada	768,000	$157,000	751,000	$147,000
Denmark	946	163	1,300	315
Finland	183	62	285	56
Germany	125	40	107	33
Ireland	4,480	391	6,140	455
Latvia	2,070	420	2,680	634
Netherlands	50	21	140	36
New Zealand	365	95	1,910	364
Other[3]	104	106	137	98
Total	776,000	158,000	763,000	149,000

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Customs value.

[3]Includes Armenia (2001), Australia (2001), Austria (2001), Chile, China, Lithuania (2001), Madagascar (2001), Mexico (2001), Russia, Sri Lanka (2002), Taiwan (2001), United Kingdom (2002), and Vietnam (2002).

Source: U.S. Census Bureau.

TABLE 9
PEAT: WORLD PRODUCTION, BY COUNTRY[1, 2]

(Thousand metric tons)

Country[3]	1998	1999	2000	2001	2002[e]
Argentina, horticultural use[e]	3	3	3	3	3
Australia[e]	15	15	3	5	5
Belarus:					
Horticultural use	99	100	100 [e]	100 [e]	100
Fuel use[e]	2,035 [4]	3,090	2,000	2,000	2,000
Total[e]	2,134 [4]	3,190	2,100	2,100	2,100
Burundi	11	20	4 [r]	5 [r]	5
Canada, horticultural use	1,125	1,253	1,277	1,319 [r]	1,301 [p]
Denmark, horticultural use[e]	205	200	200	200	200
Estonia, horticultural use and fuel use	365	1,299	760 [r]	844 [r]	850
Finland:					
Horticultural use	150 [e]	1,595	1,174 [r]	1,200 [r]	1,300
Fuel use	1,700 [e]	4,140 [e]	3,932 [r]	4,000 [r]	4,200
Total	1,850 [e]	5,735	5,106 [r]	5,200 [r]	5,500
France, horticultural use[e]	200	200	200	200	200
Germany:[e]					
Horticultural use	3,350	3,350	3,400	3,550	3,400
Fuel use	650	650	660	700	700
Total	4,000	4,000	4,060	4,250	4,100
Hungary, horticultural use[e]	45	45	45	45	45
Ireland:[e]					
Horticultural use	400	350	400	500	250
Fuel use	4,000	5,600	5,100	5,000	2,500
Total	4,400	5,950	5,500	5,500	2,750
Latvia, horticultural use and fuel use	172	956	456 [r]	555 [r]	560
Lithuania, horticultural use and fuel use	202	390	246	263 [r]	270
Moldova[e, 5]	475	475	475	475	475
New Zealand, horticultural use[e]	23	22	24	24	24
Norway, horticultural use[e]	30	30	30	30	30
Poland, horticultural use and fuel use	243	310	380 [r]	325 [r]	300
Russia[5]	1,767	3,350	2,100	2,100	2,100
Spain[e]	60	50	50	50	50
Sweden:[e]					
Horticultural use	200	440	500 [r]	400	400
Fuel use	120	800	400	700	750
Total	320	1,240	900 [r]	1,100	1,150
Ukraine[e, 5]	1,000	1,000	1,000	1,000	1,000
United Kingdom[e]	500	500	500	500	500
United States, horticultural use	685	731	792	870	642 [4]
Grand total	19,800	31,000	26,200 [r]	27,000 [r]	24,200
Of which:					
Horticultural use	6,510	8,320	8,150 [r]	8,440 [r]	12,500
Fuel use	8,510	14,300	12,100 [r]	12,400 [r]	10,200
Unspecified	4,810	8,370	5,970 [r]	6,120 [r]	6,120

[e]Estimated. [p]Preliminary. [r]Revised.

[1]World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

[2]Table includes data available through June 25, 2003.

[3]In adddition to the countries listed, Austria, Chile, Iceland, and Italy produced negligible amounts of peat.

[4]Reported figure.

[5]Production appears to be for fuel use.